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PROXIMATE ANALYSIS, TRANSLOCATION AND ELEMENTAL DISTRIBUTION OF CELOSIA TRIGYNA L FROM THE WESTERN GEOGRAPHICAL REGION OF NIGERIA

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Celosia trigyna L which belongs to the plant family Amaranthaceae, is a medicinal plant used in orthodox medicine to treat several diseases such as sores, boils, costal pains diarrhoea, chest related complications and menstrual cramps. In this study, the concentration of the elements in the plants and growth soil from the western region of Nigeria was investigated. The, soil organic matter (SOM), pH and cation exchange capacity (CEC) in the growth soil was also determined in order to validate the soil quality effects on elemental uptake. The elemental concentration in the leaves were found to be in decreasing order of $\text{Ca} > \text{Mg} > \text{Fe} > \text{Mn} > \text{Zn} > \text{Cu} > \text{Pb} > \text{As} > \text{Ni}$ but variation of Pb and Ni was observed within the plant parts. The proximate analysis in the leaves were ash ($22 \pm 0.58\%$), crude fibre ($1.4 \pm 0.2\%$) protein ($25.6 \pm 1.05\%$) and fat ($1.6 \pm 0.57\%$) $P < 0.05$. Calcium and Zn were found to contribute between 13.3-17.3% and 6.1-8.4%, respectively, towards their recommended dietary allowance. However, Fe and Mn contribute above 50% towards its

RDA for these elements which makes the plant suitable for treating deficiencies of these elements. Hierarchical cluster analysis indicated that some elements absorbed by the plant were from common sources. Also, correlation coefficient shows synergistic and antagonistic relationships between soil parameters and elements across the plant parts. Efficient translocation of nutrients was observed in the leaves compared to the stem as the translocation factor ($\text{TF} > 1$) for most of the elements. Cadmium was not detected in the leaves but lead and arsenic were observed at low concentrations well below the tolerable upper intake level (ULs), making them safe and beneficial for human consumption.

Biography

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